



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

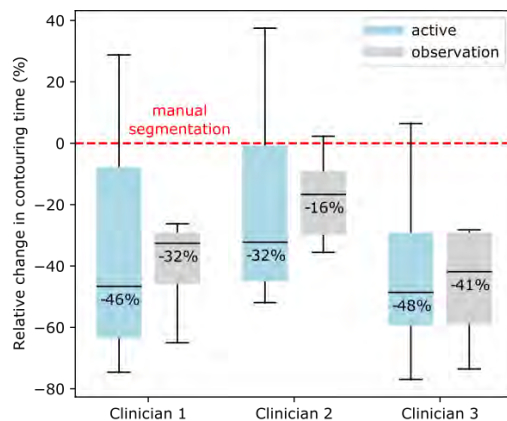


Figure 1: Relative change in active contouring time and observation time when using the deep learning tool compared to manual segmentation. The boxplot shows the median relative change in contouring time for each clinician.

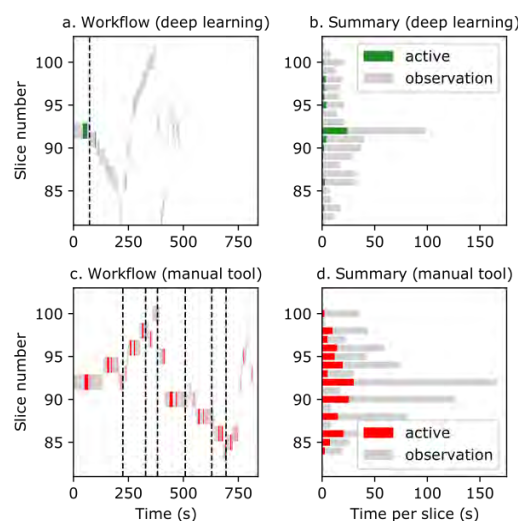


Figure 2: Example of user interaction times for one non-small-cell lung tumour using a deep learning (a,b) and manual (c, d) contouring tool. Interaction times are shown as a workflow (a, c) and an aggregated slice-by-slice summary (b, d). The vertical lines in (a) and (c) indicate when the prediction function of the deep learning tool and the linear interpolation of the manual tool were used, respectively.

Conclusion

An interactive deep-learning assisted contouring approach was evaluated and shown to decrease both the active contouring time and observation time when used to delineate lung cancer GTVs. Observation time was found to make up the majority of the contouring time. Although observation time is only indirectly affected by the contouring method, it was positively impacted by the deep learning tool. Such an interactive tool can be integrated in the clinical workflow to assist clinicians in contouring tasks and to improve contouring efficiency.

PO-1165 Dosimetric parameters in hypofractionated radiotherapy in NSCLC cohort during SARS-COV-2 pandemic

M.A. González Ruiz¹, V. Vera Barragán², A. Wals Zurita¹, A. Ortiz Lora³, P. Vicente Ruiz¹, N. Ugarte Ruiz de Aguirre¹, J.J. Cabrera Rodríguez²

¹University Hospital Virgen Macarena, Radiation Oncology, Seville, Spain; ²University Hospital of Badajoz, Radiation Oncology, Badajoz, Spain; ³University Hospital Virgen Macarena, Radiophysics, Seville, Spain

Purpose or Objective

Moderate hypofractionation has been more popular in the last years, however no standard dosimetric parameters has been established. The majority of the dose-volume-constraints (DVCs) published refer to conventional 2 Gy/ fraction.

In this study, we analyse different dosimetric parameters in patients (pts) with non-small cell lung cancer (NSCLC) treated with concomitant radiochemotherapy (RCT) or radiotherapy (RT) alone with radical intention and hypofractionated scheme in pandemic era. Due to the lack of consensus on this aspect, we analyse the relationship between tolerance to treatment and dosimetric parameters to aid its use in the clinic.

Materials and Methods

Retrospective and multicentric study of 49 pts with locally advanced NSCLC treated from November 2019 to December 2020. During SARS-CoV-2 pandemic, hypofractionated schedules have allowed to decrease the duration of thoracic radiotherapy. The hypofractionated scheme used was 20 fractions of 2.75 Gy/daily (total dose 55 Gy, BED10=70 Gy). 3-dimensional conformal radiation therapy (3DCRT), intensity modulated radiation therapy (IMRT) and volumetric modulated arc therapy (VMAT) were allowed. We report gross tumour volume (GTV), planning tumour volume (PTV) and D98% and D95% PTV. Organ-at-risk (OARs) examined included lungs-GTV (V20<35% and mean-dose<20Gy), heart (V25<10%) and oesophagus (V50<40% and mean-dose<34 Gy). To evaluate toxicity during the treatment, we use CTCAE v.5 scale.

Results

Mean GTV was 85.6 cc (3.3cc-581.3cc) and mean PTV was 268.8 cc (13cc-1047.4cc). Mean D98% PTV was 53 Gy and mean D95% PTV was 53.8 Gy.

Most pts had G1-G2 cardiac toxicity like pericarditis, oesophagitis and pneumonitis. Only two pts (4%) had G3 oesophagitis and G3 pneumonitis (2%). No grade 4-5 toxicity was reported.

In the analysis of DVCs, lungs-GTV V20<35% and lungs-GTV mean-dose < 20 Gy were associated with more pneumonitis regardless of grade (p 0.018 and p 0.027).

In terms of oesophagitis, V50<40%, was associated with more oesophagitis regardless of grade (p 0.037). Mean dose < 34 Gy in oesophagus and heart DVCs were not associated with more toxicity in our study.

There were not differences between T stage (<T3 vs ≥ T3) and N stage (<N2 vs ≥ N2) and mean PTV (p 0.55 and p 0.178).

There were not differences in terms of cancer-specific survival and PTV (p 0.195).

Conclusion

In moderately hypofractionation, it is important to consider that dosimetric parameters cannot be the same as in standard fractionation (2 Gy/fraction).

Due to changing radiotherapy technique, DVCs may need to be adjusted based on different dose distribution.

According to our results, hypofractionated radiotherapy in NSCLC is well-tolerated with low rates of grade 3-4-5 toxicity but lungs-GTV V20<35%, lungs-GTV mean-dose < 20 Gy and oesophagus V50<40% were associated with more toxicity regardless of grade. Because of that, we consider it worth investigating the relationship between dosimetric parameters and toxicity in order to reach a consensus in daily clinical practice.

PO-1166 Treatment patterns and efficacy of durvalumab maintenance after CRT in real-world NSCLC patients

J. Taugner¹, L. Käsmann¹, C. Eze¹, B. Flörsch¹, J. Guggenberger¹, A. Tufman², N. Reinmuth³, T. Duell³, C. Belka¹, F. Manapov¹

¹LMU Munich, radiation oncology, Munich, Germany; ²LMU Munich, pneumology, Munich, Germany; ³Asklepios Fachkliniken München Gauting, thoracic oncology, Munich, Germany

Purpose or Objective

Prospective evaluate of the clinical use and real-world efficacy of durvalumab maintenance treatment after chemoradiotherapy (CRT) in inoperable non-small cell lung cancer (NSCLC).

Materials and Methods

All consecutive patients with PD-L1 expressing NSCLC treated in a single tertiary cancer centre after October 2018 were included. Every three months after CRT, physical examinations, PET/CT and/or contrast-enhanced CT-Thorax/Abdomen were performed. Descriptive treatment pattern analyses, including reasons of discontinuation and salvage treatment, were undertaken. All statistics were calculated from the last day of thoracic irradiation (TRT).

Results

Twenty-eight patients with PD-L1 expressing unresectable NSCLC were included. Median follow up achieved 19.8 months (range: 1.2-30.6). Durvalumab was initiated after a median of 23 (range: 13-103) days after completion of CRT. In median 14 (range: 2-24) cycles of durvalumab were applied within 5.8 (range 1-12.7) months. Seven patients (25%) are still in treatment and eight (29%) have completed treatment with 24 cycles. Maintenance treatment was discontinued in 13 (46%) patients: In 7 (25%) patients treatment was discontinued due to progression, 4 (14%) patients developed grade 3 pneumonitis according to CTCAE v5 after a median of 3.9 (range: 0.5-11.6) months and 7 (range: 2-17) cycles of durvalumab. Four (14%) patients developed grade 2 skin toxicity. One (4%) patient has discontinued treatment due to non-compliance.

Six and 12-month progression-free survival (PFS) rates were 83% and 57%, median PFS was not reached. No case of hyperprogression was documented. Eight (29%) patients have relapsed during maintenance treatment after a median of 4.8 (range: 2.2-11.3) months and 11 (range: 6-17) durvalumab cycles. Two patients (7%) developed a local-regional recurrence after 14 and 17 cycles of durvalumab. Extracranial distant metastases and brain metastases as first site of failure were detected in 4 (14%) and 2 (7%) patients, respectively. Three (11%) patients presented with symptomatic relapse.

Conclusion

Durvalumab maintenance after completion of CRT in PD-L1 expressing inoperable NSCLC patients has a favourable safety profile. After a median follow-up of 19.8 months, durvalumab was discontinued in 25% of all patients due to progressive disease. All patients with progressive disease were eligible for second-line treatment.

PO-1167 Radiomic approach for prediction of response to radiochemotherapy in stage III NSCLC

S. Ramella¹, M. Miele¹, S. Silipigni¹, S. Gentile¹, G. Iannello², E. Cordelli², P. Soda², M. Fiore¹

¹Campus Bio-Medico University, Radiation Oncology, Rome, Italy; ²Campus Bio-Medico University, Computer Science and Bioinformatics Laboratory, Integrated Research Centre, Rome, Italy